

Practice: Safety in The Chemistry Laboratory

Multiple choice: There is one correct answer for each of the following questions. Circle the most correct answer.

General

- 1) According to the safety instructions, if you fail to follow any safety rule:
 - a) you may pay a fine.
 - b) you may be dismissed from the lab
 - c) you may be asked to work with a partner.
 - d) you may be asked to explain yourself.
 - e) you may be asked to work alone and away from other students.

- 2) You are excused from wearing goggles in lab:
 - a) if you have permission from your doctor.
 - b) if they are uncomfortable to wear.
 - c) if you are finished with the experiment and ready to clean up.
 - d) none of the above.

Safety Equipment

- 1) The drench hose
 - a) should be handled carefully to avoid explosions.
 - b) can be used on small chemical spills on the counter.
 - c) can be used on chemical spills on a small area of the body or as an eye wash.
 - d) should not be used on people.
 - e) none of the above.

- 2) The phone located in the lab:
 - a) is to be used for calling 911 in case of emergency.
 - b) is to be used to call home, only if you are late.
 - c) should not to be used at all.
 - d) is to be used if you have forgotten your cellular phone at home.
 - e) None of the above

- 3) For large chemical spills on the countertop or floor:
 - a) use a fume hood.
 - b) use a spill kit.
 - c) use baking soda (sodium bicarbonate).
 - d) use emergency exits.
 - e) use a drench hose.

- 4) In the hallway across from the lab entrance, there is:
 - a) a security camera for your safety.
 - b) a first aid kit.
 - c) an intercom with a button and a picture of an emergency phone on it.
 - d) a fire extinguisher.
 - e) none of these.

Getting Ready for The Chemistry Lab

- 1) You should prepare for the lab by:
 - a) reading the experiment carefully when you enter the lab.
 - b) washing your hands well before starting the experiment.
 - c) listening well to other students discussing the experiment.
 - d) reading the assigned experiment before coming to the lab.

- 2) If you do not understand the experimental procedure:
 - a) ask your classmate.
 - b) read the experiment many times.
 - c) leave the lab.
 - d) ask the instructor.
 - e) none of the above.

- 3) In the lab each student should:
 - a) be responsible for his own safety and no one else.
 - b) feel safe and secure like being at home.
 - c) be on alert, watching for his own safety and the safety of others .
 - d) mind his own business and ignore what the neighbor is doing.
 - e) none of the above.

- 4) If you are pregnant or have a medical condition:
 - a) wear loose clothes so you can move freely.
 - b) do not hesitate to work in the lab since it is well sterilized.
 - c) check with your physician prior to working in lab.
 - d) bring comfortable shoes to wear.
 - e) none of the above.

- 5) Before evacuating the lab in case of earthquake or other emergency, you will:
 - a) turn off gas valves and electrical equipment.
 - b) clean your desktop and work area thoroughly.
 - c) pick up all solids from the floor and sink even if they are not yours.
 - d) wash your hands and any other area of skin that has contacted lab equipment or lab benches.
 - e) make sure floor area, fume hoods, and sink area are clean.

General Rules of Conduct

- 1) You are permitted to enter the lab if:
 - a) the door is open and nobody is present.
 - b) the instructor is present.
 - c) the door is open and a group of students are present.
 - d) if the janitor is present with his safety trained dog .

- 2) You may do an unassigned experiment, only:
 - a) if you are sure it is safe.
 - b) if you have found it on the internet.
 - c) if you have designed it carefully yourself.
 - d) if you are finished early in lab.
 - e) none of the above.

- 3) You can only change the procedure of the experiment if:
 - a) you know for sure it is safe to do so.
 - b) your neighbor is willing to help you.
 - c) you want to do something different from everyone else.
 - d) you know it will be more interesting.
 - e) none of the above.

- 4) In lab you are allowed to eat and drink only:
 - a) if you are very hungry.
 - b) if you have washed your hands well.
 - c) if the food is healthy and can be digested fast and easily.
 - d) if the food has been covered well to avoid contamination.
 - e) None of the above

- 5) Store your books and bags:
 - a) on your lab bench.
 - b) in the aisle between lab benches.
 - c) in the cabinet in the lab.
 - d) under your bench.
 - e) on the top of the instructor's desk.

- 6) If you notice unexpected chemical reaction of your experiment:
 - a) proceed with caution to the next step.
 - b) check with your neighbor to see if his experiment is doing the same.
 - c) leave the lab immediately.
 - d) notify the instructor.
 - e) none of the above.

- 7) In lab, to avoid bumping into other students, you should:
 - a) never step backward.
 - b) use the back up cart.
 - c) take one step forward before you back up.
 - d) look behind you before you back up.
 - e) step backward, only if instructed to do so.

- 8) Damaged or exposed electric cord:
 - a) should always be reported to the instructor.
 - b) can be used only if you know how to fix it.
 - c) can be used only with caution and care.
 - d) should be dried out completely to avoid electric shock.
 - e) none of the above.

- 9) To avoid electric shock when handling electric plugs and equipment:
 - a) your hands must be dry.
 - b) your clothes must cover your torso.
 - c) your food should be kept at a distance.
 - d) your shoes must cover your toes.
 - e) none of the above.

- 10) The following should be reported to the instructor:
- minor injuries only; major injuries should be directed to the nurse on campus.
 - major injuries only; minor injuries can be dealt with at home.
 - all accidents except minor chemical splashes and minor spills.
 - all injuries except small burns.
 - all accidents no matter how minor.
- 11) If you feel ill in lab:
- call your family at home.
 - tell the instructor.
 - ask your neighbor to help you do the experiment.
 - work with a partner in lab.
 - leave immediately.
- 12) For your 'safety', before leaving the lab, you must
- put hot objects away.
 - wash your hands and any other area of skin that has contacted lab equipment or lab benches.
 - get the instructor's initial on the lab report.
 - see that all equipment in the community drawer is complete and well organized.
 - mix all left over chemicals into one container.
- 13) If you accidentally mix the wrong chemicals, you must:
- immediately dispose of the mixture down the sink.
 - repeat the experiment one more time.
 - add an acid to neutralize it.
 - report it to the instructor.
 - share your neighbor's experimental results.

Dress Code for the Lab

- 1) If you come to lab dressed inappropriately, you will be asked to:
- but you will not be allowed to do experiment, but you may watch your partner.
 - leave the lab.
 - watch the experiment from the side door or the screen monitor.
 - make up the lab after class dismissal.
 - borrow goggles and an apron to protect yourself.
- 2) Goggles should be worn:
- when working with solutions and liquids.
 - when fumes are present.
 - when doing specific dangerous experiments.
 - all the time during lab.
- 3) You must wear goggles in the lab because:
- they look cool and are a trendy fashion statement.
 - they protect your eyes from fumes and odors.
 - they protect your eyes from chemical splashes.
 - the instructor wants all students to have uniform eyewear.
 - none of the above.

- 4) Proper apparel for the lab includes:
 - a) dangling jewelry.
 - b) short fitted clothes.
 - c) loose clothes with loose sleeves that also cover your torso.
 - d) cloths that cover your torso and your legs to the knees.
 - e) none of the above.

- 5) Proper footwear in lab is:
 - a) sandals that allow proper ventilation to the feet.
 - b) a comfortable pair of slippers.
 - c) closed-toe shoes.
 - d) shoes with low heel.
 - e) none of the above.

- 6) For safety, long hair needs to:
 - a) be tied back.
 - b) hang over your face and cheeks for protection.
 - c) be cut short.
 - d) be dyed without using harsh chemicals.
 - e) none of the above.

Working with Chemicals

- 1) If you are instructed to smell a chemical in the lab, you need to:
 - a) fan the air above the chemical toward your nose.
 - b) bring the chemical close to your nose and inhale deeply.
 - c) stir and shake the chemical well to allow the odor to come out.
 - d) add water before you smell it.
 - e) close your eyes during sniffing.

- 2) If you need to touch or rub your eyes, you must
 - a) step outside the lab where there are no chemicals.
 - b) ask permission from the instructor.
 - c) use rubbing alcohol.
 - d) use the eye wash.
 - e) wash your hands.

- 3) You should always hold containers that have chemicals:
 - a) with a pair of rubber gloves.
 - b) with a clean pair of tongs.
 - c) away from your body.
 - d) close to your chest and with a strong grip.
 - e) after rotating the lid in the counterclockwise direction.

- 4) Before using the contents of a bottle, check:
 - a) the size of the bottle.
 - b) the color and consistency of the reagent inside.
 - c) the odor and concentration of the reagent inside.
 - d) the label on the bottle.
 - e) none of the above.

- 5) To remove solid chemicals from a bottle:
 - a) use your spatula to remove the solid.
 - b) use your spoon to remove the solid.
 - c) pour the solid directly into your container.
 - d) pour the solid first into the palm of your hands.
 - e) none of the above.

- 6) To remove liquid from a reagent bottle:
 - a) gently tap the bottle with the palm of your hands.
 - b) use your medicine dropper to get out the amount of liquid needed.
 - c) pour some liquid directly into your container.
 - d) use your spatula to get the required amount.
 - e) none of the above.

- 7) An unused/leftover chemical should be:
 - a) returned back 'immediately' to its original container.
 - b) returned back to its original container right 'before' you leave the lab.
 - c) taken outside the lab and dumped on the soil to fertilize it.
 - d) sent out to the Safety Committee.
 - e) disposed of in the designated waste container.

- 8) To dispense a required amount of reagent:
 - a) bring reagent bottle to your bench, and return it immediately after you are done.
 - b) take your container to the reagent bench.
 - c) move reagent bottle to a designated area for dispensing.
 - d) ask the teacher to dispense it for you.
 - e) none of the above; reagents are not to be dispensed in lab for safety reasons.

- 9) Pick up a reagent bottle by holding it:
 - a) with your palm over the label.
 - b) at the top part above the label.
 - c) at the bottom part underneath the label.
 - d) by the lid or stopper.
 - e) none of the above

- 10) To dilute a concentrated acid:
 - a) add acid to the water.
 - b) add water to the acid.
 - c) mix both, the water and the acid, simultaneously.
 - d) never mix acid and water; the result could be quite hazardous.

- 11) Store chemicals in:
 - a) labeled containers.
 - b) glass containers.
 - c) plastic containers.
 - d) large containers.

- 12) Apply labels and markings on the etched part found on beakers and flasks by using:
- pencil only.
 - ballpoint pen only.
 - crayons only.
 - special markers, provided by the instructor.
 - none of the above.
- 13) The fume hood is used for:
- perfumed chemicals.
 - experiments that may cause explosion.
 - liquids that are colorless.
 - procedures that produce smoke or toxic gases.
 - none of the above.
- 14) When working with an experiment under a fume hood:
- keep fume hood sash down as far as possible.
 - use your hand to fan fumes away from you.
 - get the instructor's permission.
 - make sure to put your head inside the fume hood and carefully inspect the reaction taking place.
 - none of the above.
- 15) Flammable liquids:
- do not evaporate unless boiled.
 - need direct flame for heating.
 - can catch fire easily.
 - can become solid quickly.
 - none of the above.
- 16) Alcohol used in the lab:
- is tainted with poison.
 - is suitable for drinking.
 - must have a blue label.
 - is not denatured.
 - none of the above.
- 17) Wash bottles should be filled 'only' with
- washing or cleansing solution.
 - tap water.
 - distilled or de-ionized water.
 - distilled alcohol.
 - none of the above.
- 18) To add water to a reagent used in an experiment:
- use water from the faucet.
 - use distilled or de-ionized water.
 - use tap water from the wash bottle.
 - use your own water bottle from home.
 - none of the above.

- 19) To weigh 2 grams of salt in lab:
- place salt into a beaker before weighing it on the balance.
 - place salt directly on the balance to avoid contamination.
 - do not use a balance and just eye-ball a sample that may look to be about 2 grams.
 - mix the salt with water before weighing it on the balance.
 - none of the above.
- 20) If you spill solid chemicals on a balance:
- clean it immediately using a bucket filled with water and a mop.
 - brush off any spills.
 - use a disinfectant like "Purell".
 - allow the chemicals to rest on the balance for at least 15 minutes before brushing it off .
 - Ignore it since you are not trained to handle spilled chemicals.
- 21) After dispensing a chemical from a container:
- keep the stopper off the container for a few minutes to allow for proper ventilation.
 - no need to replace the stopper, since someone else will be using it right after you.
 - replace the stopper immediately.
 - allow the chemical to drip gently on the outside of the bottle.
 - get rid of the container as soon as you can.

Disposal of Chemicals

- 1) If no specific instructions for disposing of waste chemicals are given, you should dispose of all liquids and solutions into:
- any waste container available in the lab.
 - the sink with lots of water.
 - the flower beds outside the lab.
 - any empty container found around the lab.
 - none of the above.

Handling Chemical Spills

- 1) You should get under the shower in lab:
- if you spill chemicals on your hands or fingers.
 - if there is a large chemical splash on the body.
 - if chemicals get splashed into your eyes.
 - if there is a large chemical spill on the bench or floor.
 - none of the above.
- 2) If the eyewash or shower is used in lab, the affected area should be irrigated and rinsed with water for at least:
- 20 seconds.
 - half a minute.
 - an hour.
 - 15 minutes.
 - none of the above.

- 3) If you spill a large amount of chemical on the floor:
- ignore it and keep working on your experiment so you can finish on time.
 - walk straight over the spilled chemical to notify the instructor.
 - keep it confidential and do not let the students around you know about it.
 - alert nearby students and call the instructor for instructions about how to clean it up.
 - none of the above.

Working with Glassware

- 1) A cracked test tube or chipped glassware should:
- be used with care.
 - be used only if no other glassware is available.
 - never be used.
 - be sent to the dump site on campus, only when the glass repair shop is closed.
 - none of the above.
- 2) When inserting glass tubing into a rubber stopper, hold the glass tubing:
- close to the end near the stopper.
 - close to the end away from the stopper.
 - at a reasonable distance, about half-way to the stopper.
 - strongly to force it into the stopper.
 - none of the above.
- 3) If a ground glass stopper is frozen (stuck) to a bottle:
- keep it between your fingers to warm it up.
 - wiggle it nonstop until eventually it becomes loose.
 - pull it out with all your strength while your neighbor holds the bottle.
 - report it to your instructor.
 - none of the above.
- 4) When you use a thermometer:
- shake it down before using.
 - lay it on a towel.
 - lay it on a bench close to the edge.
 - hold it with a towel to prevent contamination.
 - none of the above.

Stoppers

- 1) To remove stopper or lid from a bottle, pick up the stopper then:
- save it in your pocket while dispensing the reagent.
 - lay it on its side on the countertop.
 - turn it upside down before placing it on the countertop.
 - hold it with the hand holding the reagent bottle.
 - none of the above.

Working with Hot Glassware/Equipment

- 1) Since you cannot tell from the appearance of a metal or glass that it is still hot, you should test it by:
 - a) cautiously touching it lightly with your fingers.
 - b) cautiously touching it with the palm of your hand.
 - c) cautiously bringing the back of your hand close to the hot glass or metal.
 - d) cautiously spraying it with cold water to see if it spatters.
 - e) none of the above.

- 2) To handle hot objects like a beaker or evaporating dish:
 - a) use a dry paper towel.
 - b) use a wet cloth towel.
 - c) use a wet paper towel.
 - d) run cold water on the outside of the beaker to cool it.
 - e) use a pair of tongs.

- 3) A hot object, like an evaporating dish or crucible, is allowed to cool by placing it on:
 - a) your lab notebook.
 - b) paper towel.
 - c) lab bench.
 - d) wire gauze.
 - e) none of the above.

- 4) When heating liquid in test tube, the open end of the test tube:
 - a) should point towards you.
 - b) should be pointing at an angle that allows the liquid to splash gently over the hot glass, but not out of the test tube.
 - c) should point towards the person across the lab bench from you since they are far enough away.
 - d) should be covered with a stopper or cork to avoid contamination.
 - e) none of the above.

Use of Bunsen Burners

- 1) To light a Bunsen burner
 - a) you need to step back.
 - b) you need to position the burner right in front of the gas valve.
 - c) you need to reach over the burner to turn ON the gas valve.
 - d) you need to ask your instructor to light it for you.
 - e) none of the above.

- 2) You may leave a lighted Bunsen burner unattended only, if:
 - a) you must go to the restroom.
 - b) your neighbor keeps an eye on it.
 - c) no one else is in the class but you.
 - d) you need to go to the reagent bench to quickly get more chemicals.
 - e) none of the above.

What to Do in Case of an Accident

- 1) In case of accident or injury to you or to your classmate:
 - a) must be reported immediately to the instructor.
 - b) will require that all students evacuate the lab.
 - c) can be ignored if it is minor.
 - d) must be ignored if it is not painful.
 - e) must be handled quietly by yourself, without telling anyone.

- 2) Small burns from touching hot objects, should be:
 - a) placed under running cold water.
 - b) covered immediately with a Band-Aid to protect it from the oxygen in the air.
 - c) massaged gently until it feels better.
 - d) brought closer to the air condition to cool it off.
 - e) none of the above.

- 3) If your clothing catches fire:
 - a) run quickly to the nearest drench hose or shower to smother the flame.
 - b) drop to the floor and roll on the floor to smother the flame.
 - c) let the instructor use the fire extinguisher to smother the fire
 - d) ask the student next to you to spray you with water to smother the fire.
 - e) none of the above.

- 4) A small contained fire may be:
 - a) smothered by covering it with a fire blanket.
 - b) placed carefully in the sink to be drenched with water.
 - c) smothered by covering it with a cover plate or a watch glass.
 - d) picked it up and thrown into the trash can.
 - e) watched it closely until it burns itself out completely.

- 5) In case of an earthquake:
 - a) evacuate the lab immediately.
 - b) evacuate the building immediately.
 - c) run quickly towards the emergency exit.
 - d) turn off the gas valve and stay away from falling objects.
 - e) none of the above.